County of San Diego

DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
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http://www.sdcdeh.org/

********** ADVISORY BULLETIN **********

Biodiesel Blends in Underground Storage Tanks

The Hazardous Materials Division (HMD) of the Department of Environmental Health (DEH) is the local Certified Unified Program Agency (CUPA) in the County of San Diego. The HMD, as the CUPA, is responsible for implementing and enforcing California's Underground Storage Tank (UST) laws and regulations in the county. The purpose of this advisory is inform all UST owners and operators on the regulatory status for storage of biodiesel and biodiesel-blended fuels. This advisory is an update to previous bulletin released in October 2008 (please see attachment).

Effective on June 1, 2009, the State of California Office of Administrative Law approved emergency regulations that allow for the lawful storage of certain petroleum blends containing up to 20% biodiesel (commonly known as B20) in USTs that have been tested and approved for storing petroleum diesel, provided that specified conditions are met. The interim provisions specifically allow UST systems to store petroleum blends containing up to 20% biodiesel in double-walled tanks, piping, and components that currently meet the operational permitting requirements for motor vehicle fuels (petroleum). **Petroleum blends containing more than 20% biodiesel are not approved for storage in UST systems approved for motor vehicle fluids**.

Petroleum blends containing 5% to 20% biodiesel may be stored in double walled tank systems currently meeting the operational permitting requirements for motor vehicle fuels, **if** UST owners meet additional requirements to ensure compatibility of the fuel with the UST system. HMD will require submittal of documentation to demonstrate compliance with these added conditions.

THE FOLLOWING CONDITIONS MUST BE MET BY FACILITIES CURRENTLY USING USTs TO STORE BIODIESEL BLENDS WITH BIODIESEL CONTENT BETWEEN 5% AND 20%.

- Records indicating that the UST(s) is/are listed or approved for use with petroleum diesel.
- Updated Tank Information Unified Program Consolidated Form HM-9717 (PDF | WORD).
- A written statement from the UST owner stating that the UST and components are compatible with the biodiesel blend stored. Statement shall be supported by documentation from the UST manufacturer, a nationally-recognized biodiesel association, or a nationally-recognized research organization.
- A written statement by the owner indicating that the leak detection method or equipment functions properly with the biodiesel blend stored. This statement shall be supported by documentation from the manufacturer of the release detection method or equipment.

HMD will review all complete submittals within 30 days; if all above conditions are met, HMD will issue an interim permit to operate for the UST storage of biodiesel blends between 5% and 20% biodiesel.

THE FOLLOWING CONDITIONS MUST BE MET BY FACILITIES INTENDING TO USE USTs TO STORE BIODIESEL BLENDS WITH BIODIESEL CONTENT BETWEEN 5% AND 20%.

- Records indicating that the UST(s) is/are listed or approved for use with petroleum diesel.
- Notice of Intent to store biodiesel.
- Updated Tank Information Unified Program Consolidated Form HM-9717 (PDF | WORD)
- A written statement from the owner that the UST and components are compatible with the biodiesel blend stored. Statement shall be supported by documentation from the UST manufacturer, a nationally-recognized biodiesel association, or a nationally-recognized research organization
- A written statement by the owner indicating that the leak detection method or equipment functions with the biodiesel blend stored. This statement shall be supported by documentation from the manufacturer of the release detection method or equipment.

After all the required documentation has been reviewed and approved, HMD will issue an interim permit to operate.

** Be advised that UST(s) must be approved for use with petroleum diesel, **and** the system must be in full compliance with HMD. USTs not approved for use with petroleum diesel or in full operational compliance will not be allowed to store biodiesel.*

IMPORTANT NOTE:

USTs currently containing biodiesel blended fuels greater than B20 or storing B100 are considered to be in non-compliant status. Although HMD is not issuing mandatory orders for removing the fuel, continued use of a non-compliant UST system may result in revocation of your UST operating permit and affect your eligibility for the UST Clean up fund in the event your UST system were to fail and have an unauthorized release.

If you suspect that your UST system may be experiencing structural problems or has had an unauthorized release due to biodiesel storage, immediately remove the product from the UST system and report it to the HMD Duty Desk at 619-338-2231.

HMD will continue to advise UST owners and operators on any further developments. For additional information or if you need clarification about the information contained in this advisory bulletin, please contact Robert Rapista, Underground Storage Tank Group Supervisor, at (619) 338-2309.

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The Hazardous Materials Division (HMD) of the Department of Environmental Health (DEH) is the Certified Unified Program Agency (CUPA) in the County of San Diego. The HMD, as the CUPA, is responsible for implementing and enforcing the California Underground Storage Tank (UST) laws and regulations. This advisory contains important information regarding compatibility concerns for Biodiesel and Biodiesel blended fuels stored in UST systems.

The State Water Resources Control Board sent a letter (attached) to all regulatory agencies in February 2008, indicating that UST systems storing biodiesel or biodiesel blends are subject to UST regulation Therefore, owners and/or operators of USTs must demonstrate material compatibility in accordance with Chapter 6.7, Section 28281(C)(2) of the California Health and Safety Code (HSC), prior to storing biodiesel or biodiesel blends.

You, as the UST owner/operator are responsible for ensuring that your UST system is compatible with the stored product at all times. This compatibility requirement includes **all** blends of diesel and biodiesel, as well as 100% biodiesel (B100). Currently there are no exemptions nor are there special requirements for any of these types of fuels. Biodiesel and Biodiesel mixtures stored in UST systems are subject to exactly the same requirements as all other fuels. USTs systems are deemed compatible with a given fuel when there is written approval by Underwriter's Laboratories (UL) or other recognized national or international independent third party testing organization. Currently, the SWRCB and HMD are not aware that UL, or any other independent third party testing organization has approved any UST systems as being compatible for storing any concentration of biodiesel blended fuels or B100.

To reduce the likelihood of failure of your UST system due to incompatibility with biodiesel or biodiesel fuel blends, the HMD is advising you to contact your UST and piping manufacturers to find out whether their equipment has been tested by UL or another independent third party testing organization and found to be compatible with biodiesel blended fuels or B100. Be advised that continued use of a non-compliant UST system may result in revocation of your UST operating permit and affect your eligibility for the UST Clean up fund in the event your UST system were to fail and have an unauthorized release.

If you suspect that your UST system may be experiencing structural problems or has had an unauthorized release as a result of biodiesel storage, immediately remove the product from the UST system and report it to the Hazardous Materials Duty Desk at 619-338-2231. HMD will continue to advise UST owners and operator on any further developments. For additional information or if you have any questions about the information contained in this advisory bulletin, please contact Robert Rapista, Underground Storage Tank Group Supervisor at (619) 338-2309.

HM-9902 (10/08)

State Water Resources Control Board

Division of Water Quality

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Mailing Address: P.O. Box 2231, Sacramento, California 95812
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Linda S. Adams
Secretary for Environmental Protection

Arnold Schwarzenegger
Governor

February 28, 2008

To: Local UST Regulatory Agencies and Interested Parties

CLARIFICATION OF REGULATIONS APPLYING TO BIODIESEL-E STORED IN UNDERGROUND STORAGE TANK (UST) SYSTEMS

There are several chemically different versions of "biodiesel" all of which are produced from the same feedstock: animal fats, raw vegetable oils, and recycled cooking greases. The most common and widely distributed version is a fuel composed of mono-alkyl esters of long chain fatty acids produced through a transesterification process, which we refer to as Biodiesel-E to indicate it is an "ester" version. A second version reportedly under development is an alkane fuel produced via the Fisher-Tropsch process and depolymerization, which we refer to as Biodiesel-A. This letter addresses only Biodiesel-E described below as "biodiesel", as Biodiesel-A is not yet available.

Biodiesel can be used, either as a pure fuel or blended with conventional petroleum-based diesel fuel, to power diesel engines. The use of biodiesel is expected to increase in the coming years as a result of the Energy Independence and Security Act signed into law in December 2007, which mandates an increase of renewable fuels from 6 billion gallons in 2007 to 36 billion gallons by 2022. In anticipation of this increased use, the State Water Resources Control Board (State Water Board) is issuing this letter to clarify how existing state laws and regulations apply to underground storage tank (UST) systems storing biodiesel and biodiesel blends. This letter supersedes any previous correspondence regarding biodiesel.

1. Are UST systems storing biodiesel or biodiesel blends subject to regulation?

Yes. Even biodiesel that has been manufactured in strict accordance with ASTM D6751-07a (March 2007) standards for biodiesel usually meets the definition of "hazardous substance" provided in the California Health and Safety Code, Chapter 6.7, section 25281(h), because the most recent ASTM biodiesel specifications[1] allow 0.2 %v/v methanol, which is a hazardous substance. Biodiesel manufactured out of specification has an even higher probability of containing hazardous substances, and to date most biodiesel has been manufactured out of specification[2].

[1] ASTM D6751-07a (March 2007)
[2] In 2007 the U.S Department of Energy, National Renewable Energy Laboratory published the results of tests conducted on B100 samples obtained from biodiesel manufacturers around the U.S. and found that approximately 60% DID NOT meet the ASTM D6751-07(a) standard for biodiesel including out of specification peroxide levels.

Additionally, biodiesel manufacturers recommend the addition of antioxidants to stabilize the fuel, most of which are hazardous substances. Manufacturers also add, or recommend adding, other regulated hazardous substances such as biocides and fungicides to reduce microbial activity. Without the addition of these hazardous substances, biodiesel may oxidize and form peroxides which are also on the OSHA Special Health Hazard Substance List because peroxides can be highly explosive and mutagenic. Biodiesel may also contain toxic remnants of the manufacturing process, such as methanol or sodium hydroxide, and other contaminants such as peroxides. Finally, even "100%" biodiesel may contain small amounts of petroleum diesel. This occurs when petroleum diesel is intentionally added to obtain a desired physical property (lubricity, viscosity, etc.), or when biodiesel is inadvertently contaminated as it moves through a distribution network (bulk tank, piping, delivery truck, etc.) that is shared with petroleum diesel.

The presence of any quantity of any hazardous substance within the biodiesel is sufficient to designate the entire contents of the UST system a "hazardous substance" as defined in the Health and Safety Code. Therefore, local regulatory agencies are advised to assume that even "100%" biodiesel is a hazardous substance unless the particular batch of biodiesel being stored has been analyzed and determined to contain no antioxidants that contain regulated substances, nor any biocides, fungicides, petroleum diesel, methanol, peroxides, or other hazardous substances. Local regulatory agencies and UST owners/operators should be aware that each delivery of biodiesel will be different, depending on variables such as the supplier, biodiesel feedstock, and quality controls employed during the manufacturing (transesterification) process.

2. Would UST systems storing "100%" biodiesel be exempt from regulation because the small amount of hazardous substance found in the stored product could be considered a "*de minimis*" concentration?

No. California's UST laws and regulations do not provide a *de minimis* exemption, meaning any concentration of hazardous substance stored in an UST is subject to regulation. Federal UST regulations[3] do provide an exclusion for UST systems storing a *de minimis* concentration of regulated substance. However, even examples given in the preamble to this federal regulation include substances with exceedingly small concentrations, such as chlorine in drinking water and swimming pools (generally a few parts per million) (53 Fed Reg. 37108 – 37109 (1988)). Based on the examples noted in the preamble we believe that it would be inappropriate to apply a *de minimis* exemption to biodiesel, even under federal regulations.

[3] 40 CFR, §280.10(b)(5)

3. Is switching from petroleum diesel to a biodiesel blend considered a change of stored substance?

Yes. When any percentage of biodiesel is added to an UST system that has been permitted to store petroleum diesel fuel, it is considered a change of stored substance. California Code of Regulations, Title 23, section 2711 requires the UST owner or operator to inform the local regulatory agency of the hazardous substances that are stored, or are proposed to be stored, in the UST system. Section 2711 also requires the owner or operator to notify the local agency of any changes to that information within thirty days unless required to obtain approval before making the change. We strongly advise local regulatory agencies to require notification from the UST owner/operator PRIOR to any change of stored substance. This will allow the local agency to determine ahead of time whether or not the UST system is suitable for storing the new substance.

4. Must an owner or operator of a UST demonstrate material compatibility prior to storing biodiesel or biodiesel blends?

Yes. California Health and Safety Code, Chapter 6.7, requires primary containment to be compatible with the product stored[4]. This means that the primary containment must retain its chemical and physical properties upon contact with the stored substance for the life of the UST system under normal operating conditions. California Health and Safety Code, Chapter 6.7, also requires that secondary containment be designed to prevent structural weakening as a result of contact with the stored substance[5]. These requirements apply to any regulated UST system installed after 1984, including those storing biodiesel or biodiesel blends. The UST owner/operator is ultimately responsible for ensuring that their UST system is compatible with the stored product at all times.

If you have questions regarding this document, please contact Laura Fisher-Chaddock at (916) 341-5870 (lchaddock@waterboards.ca.gov) or Robert Hodam at (916) 341-5871 (rhodam@waterboards.ca.gov).

Sincerely,

Original signed by

Kevin L. Graves, P.E.
Underground Storage Tank Program Manager

[4] §25291(a)(1), §25290.1(c)(1), §25290.2(c)(2)
[5] §25291(a)(2), §25290.1(c)(2), §25290.2(c)(2)